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Research Report - 04

This is a very summarized report, intended for specialists and scholars from bio-electrical fundamentals. We show in a simple, basic concepts of electro-genesis and physical-chemical substrate.

Electrogenesis (bio-electrical fundamentals) - Physical chemistry of bio-electric phenomena

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Bio-electrical fundamentals

electrogenesis biolectric

Classification into three types:

a) Membrane potential: The penetration of a sensor (electrode) into a cell is interpreted as a sudden and large deflection of the baseline up to 75 millivolts. On this base line are two new tracks.

b) Postsynaptic potentials, these plots are of great length and reach 15 millisecond are of the form of graduated response, showing intermediate amplitude values, have the possibility of temporal and spatial summation, it is devoid of refractory phase. Only this can be induced by stimulation physiology, orthodromic synaptic stimulation. Showing two possible ways: one positive and one negative, the polarization or inducing, hyper-polarizing or inhibitor.

c) Point, the answer is extreme, it shows the full extent or opposite (this is not shown in any way), these samples are followed by a tip refractory phase, thus showing an absence of temporal or spatial summation. These samples are obtained by stimulation tip physiological synaptic impulses initiated in the great circle.
The induction of the response is linked to a depolarization of the membrane, there is a threshold for induction of this provocatively. The frequency of spikes is increased by depolarization and equal to the size is reduced. This response meets all its amplitude, opposite phase in a fixed bias.
When the depolarization is sufficient is achieved disappearance of the tips being the state of inactivity or silence cell bio-electric, cell as opposed to inhibition by hyper-polarization, although the bio-electrical silence is outwardly the same as the previously induced.

Physico-chemical substrate of the bio-electrical phenomena

a) Membrane potential, cellular metabolic activity. It is the consequence of differences in ionic concentration between inbetween the means intra and extra-cellular. Each ion has the potential of two elements Na + and K +, the energy that sustains the two potentials are dependent dehydrogenation and decarboxylation processes, that are basic metabolic processes that constitute the cellular activity.

b) Post-synaptic potential, a chemical transmitter acetylcholine-like, it causes sudden variations of the ionic permeability of sub-synaptic membrane, caused by this inexcitability bio-electrical membrane can not play the post-synaptic potential except via a bio-physiological chemistry.

c) Point, if there is a low polarization of the membrane, causing a chain reaction to the extra-synaptic membrane, which is bio-electrically excitable. In the first phase permeability for Na + increases so sudden depolarization causes a positive feedback.
In a second phase, while the first phenomenon is caused, in this second phase reduces the permeability of K + increasing, then increases in a more intense again recovering from the baseline, exceeding the initial value.
This point we mentioned, this is the result of a complex bio-electric phenomenon. The motor neuron overlaps two elements only the second is an active phenomenon.
The region of origin of the axon is more susceptible to depolarization than the rest of the somatic membrane, causing tips of only 10 or 15 millivolts, the rest of the membrane requires twice the increase or greater.
The interdependence and interrelationships of all these potentials on the potential core, is all dependent on cellular metabolic activity, all show a self-regulating system, it determines the flow of energy and therefore wear it makes it possible to phenomenology.

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